INCH-POUND

MIL-DTL-9395/31D
30 May 2001

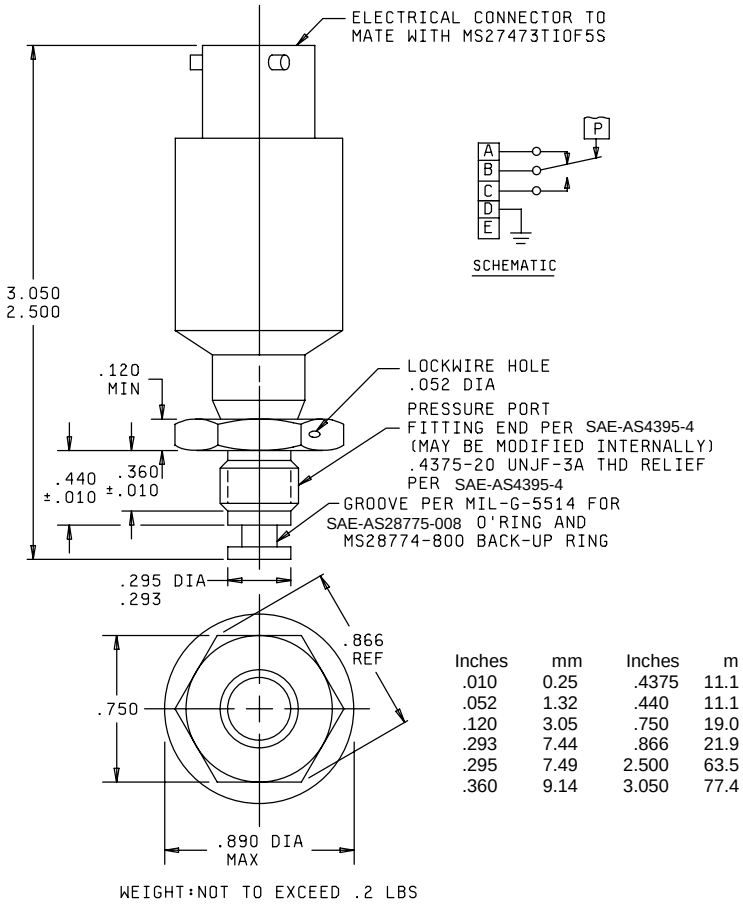
SUPERSEDING
MIL-S-9395/31C
30 October 1989

DETAIL SPECIFICATION SHEET

SWITCHES, PRESSURE, (GAGE), TYPE II, 5 AMPERES

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and the issue of the following specification listed in that issue of the Department of Defense Index of Specification and Standards (DoDISS) specified in the solicitation: MIL-DTL-9395.

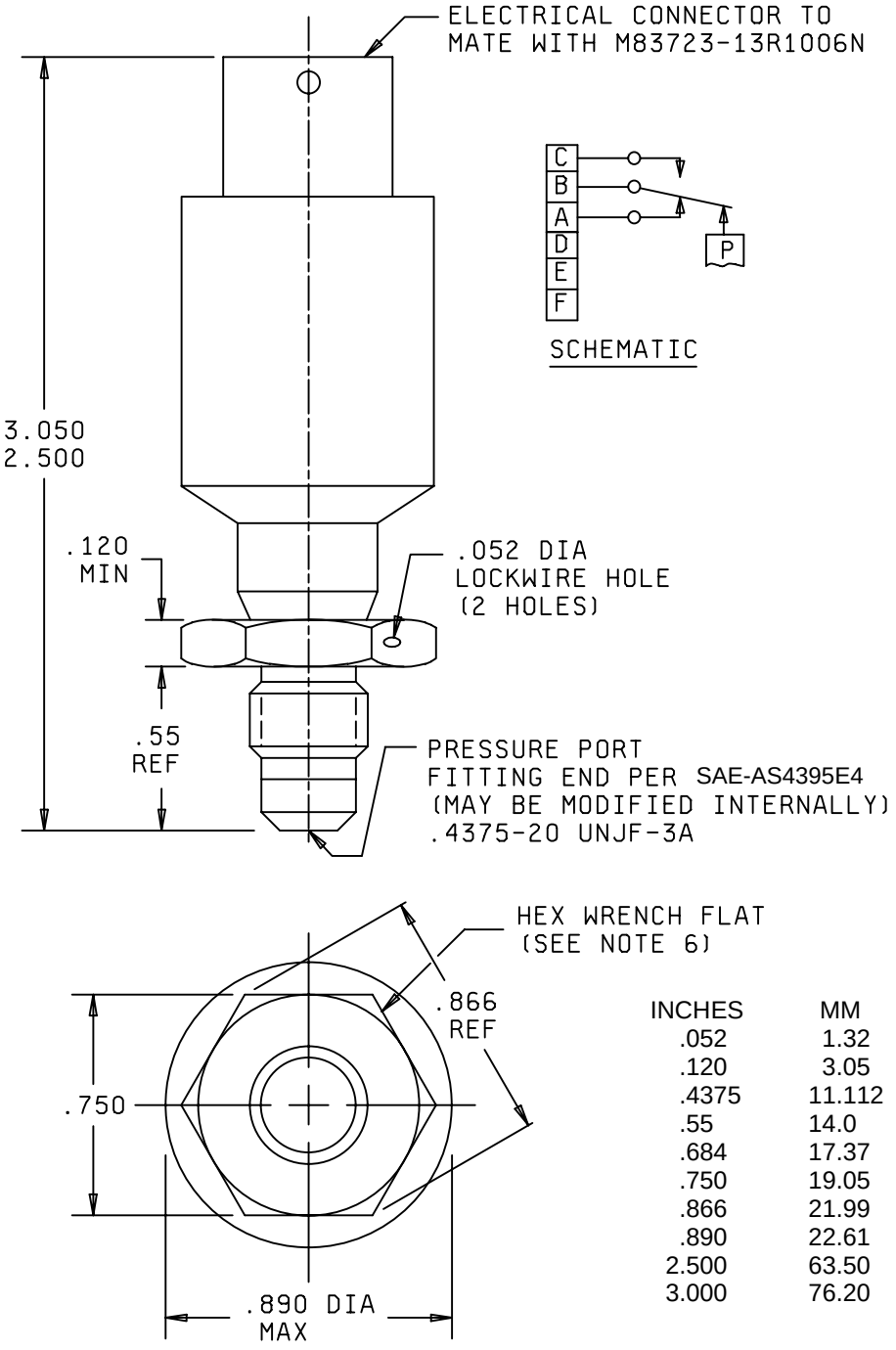


Inches	mm	Inches	m
.010	0.25	.4375	11.1
.052	1.32	.440	11.1
.120	3.05	.750	19.0
.293	7.44	.866	21.9
.295	7.49	2.500	63.5
.360	9.14	3.050	77.4

Configuration 1

FIGURE 1. Switches.

AMSC N/A FSC 5930

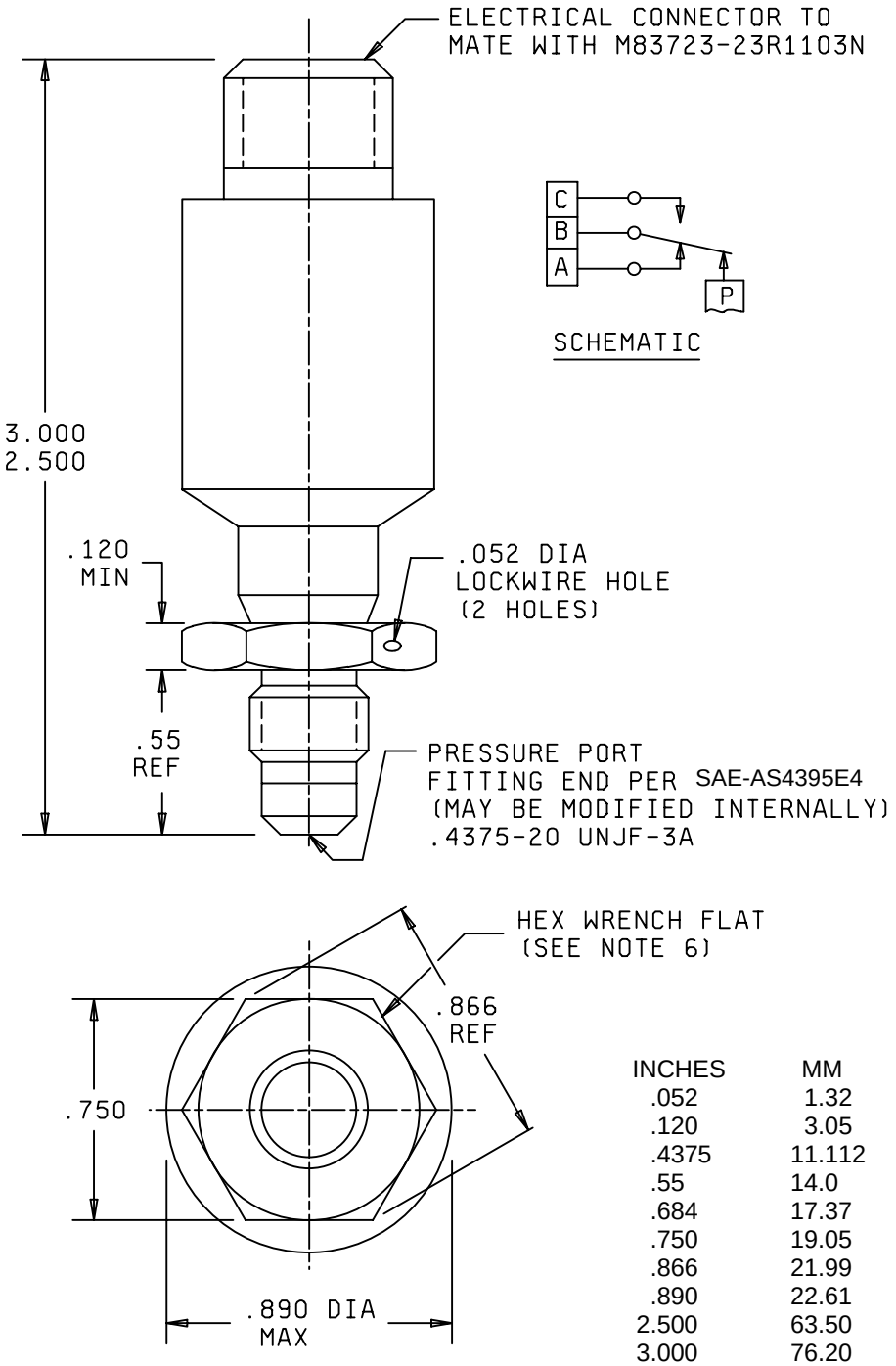


INCHES	MM
.052	1.32
.120	3.05
.4375	11.112
.55	14.0
.684	17.37
.750	19.05
.866	21.99
.890	22.61
2.500	63.50
3.000	76.20

WEIGHT: NOT TO EXCEED .2 lbs.

Configuration 2

FIGURE 1. Switches - Continued.

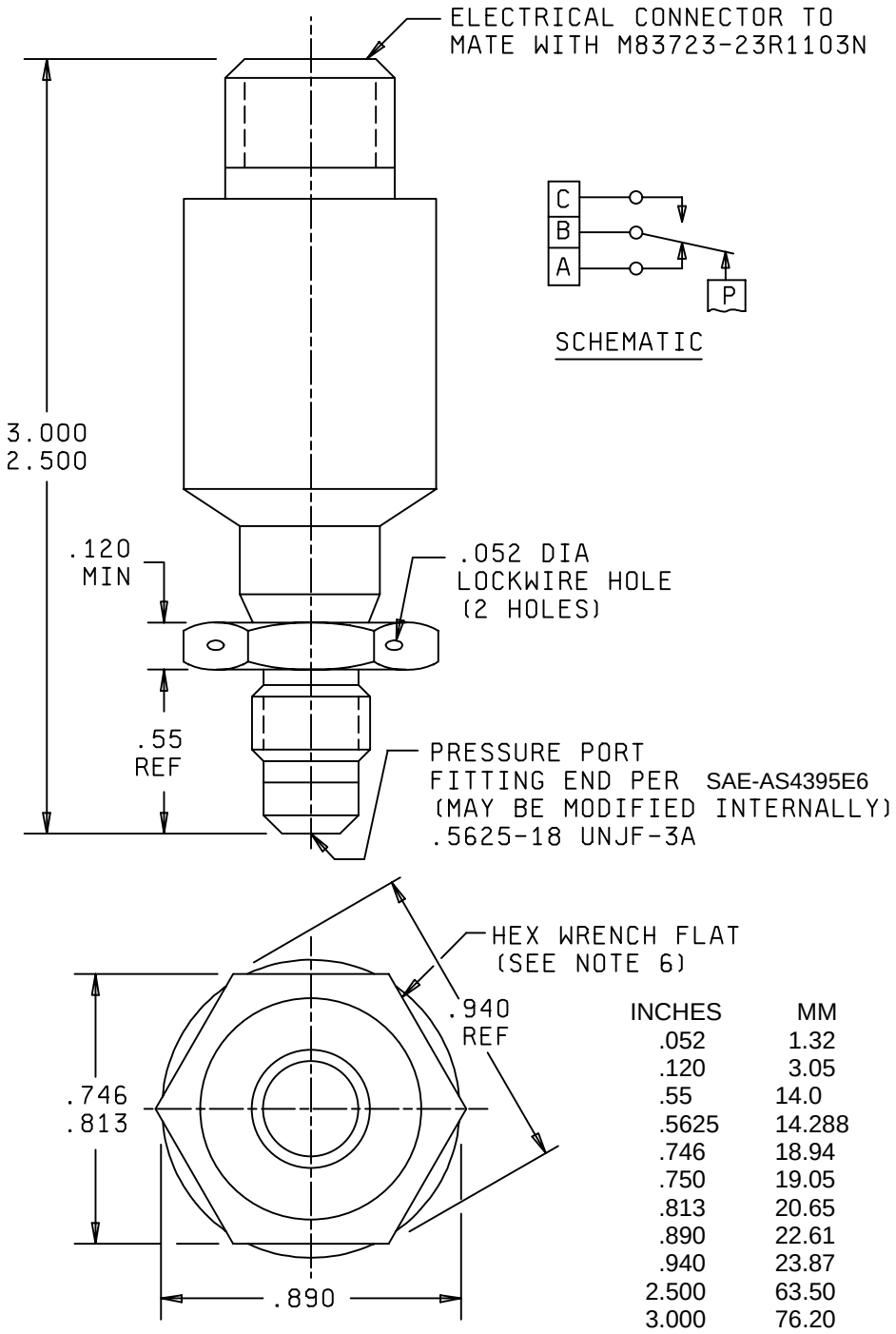


INCHES	MM
.052	1.32
.120	3.05
.4375	11.112
.55	14.0
.684	17.37
.750	19.05
.866	21.99
.890	22.61
2.500	63.50
3.000	76.20

WEIGHT: NOT TO EXCEED .2 lbs.

Configuration 3

FIGURE 1. Switches - Continued.

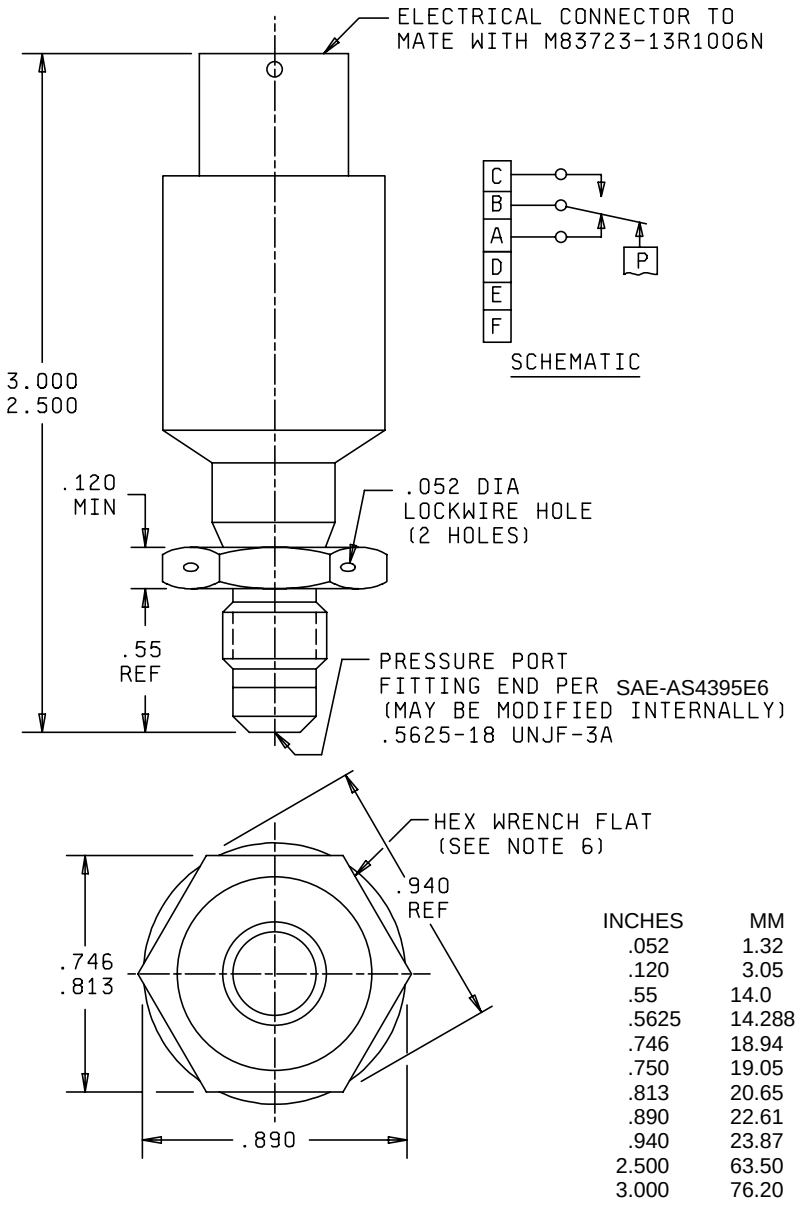


INCHES	MM
.052	1.32
.120	3.05
.55	14.0
.5625	14.288
.746	18.94
.750	19.05
.813	20.65
.890	22.61
.940	23.87
2.500	63.50
3.000	76.20

WEIGHT: NOT TO EXCEED .2 lbs.

Configuration 4

FIGURE 1. Switches - Continued.



INCHES	MM
.052	1.32
.120	3.05
.55	14.0
.5625	14.288
.746	18.94
.750	19.05
.813	20.65
.890	22.61
.940	23.87
2.500	63.50
3.000	76.20

WEIGHT: NOT TO EXCEED .2 lbs.

Configuration 5

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Exact shape of switch is optional provided outline dimensions specified are not exceeded and mounting holes and connector locations are as specified.
4. Schematics shown are for switches with pressure ports exposed to room ambient.
5. Unless otherwise specified, tolerance is ±.005 (0.13 mm).
6. A minimum of two wrench flats is needed.

FIGURE 1. Switches - Continued.

REQUIREMENTS:

Dimensions, weight, and electrical schematic: See figure 1.

Materials: All external parts including pressure port, housing, and electrical connector shall be fabricated from corrosion-resistant (stainless) steel suitable for welding. External parts shall be joined by welding; solder joints shall not be allowed.

Calibration: See tables I, II, III, and IV.

Proof pressure: 4500 lb_f/in^2. The electrical chamber shall withstand 4500 lb_f/in^2 without rupture.

System pressure: 3000 lb_f/in^2.

Burst pressure: 7500 lb_f/in^2.

Electrical ratings:

Operating voltage: 28 V dc.

Current rating: 5 amperes resistive.
2 amperes inductive.

Seal:

Pressure chamber: Media proof. Subject switches to proof pressure for 2 minutes using hydraulic fluid in accordance with MIL-H-5606 with chamber pressure continuously being monitored. Isolate the chamber at proof pressure, with the chamber disconnected from the pressure source. Under that condition, the pressure shall not drop more than 5 lb_f/in^2 for the first 30 seconds to allow for stabilization of test equipment. No pressure loss is allowed thereafter for the remainder of the 2 minutes.

Electrical chamber: See table I.

Electrical connector: See figure 1.

Pressure port: See figure 1.

Media: Hydraulic fluid in accordance with MIL-DTL-5624 or MIL-PRF-83282; fuel in accordance with MIL-DTL-5624; lubricating oil in accordance with MIL-PRF-7808.

High temperature (operating and nonoperating): B (+275°F).

Low temperature (operating and nonoperating): D (-65°F).

Altitude: C (except 80,000 feet).

Shock: C (100 g).

Vibration: S (test condition D, method 204 of MIL-STD-202).

Life (mechanical): A (100,000 cycles).

Life (electrical): C (50,000 cycles).

Acceleration: C (8 g).

Pulsation amplitude: E (10 percent).

Pulsation frequency: D (500 ±50 Hz).

Pressure rise: F (500,000 $lb_f/in^2/s$).

Dielectric withstanding voltage (at reduced barometric pressure): Applicable.

Connector torque: Applicable.

Part or Identifying Number (PIN): Consists of the prefix "M9395/31-" followed by a five-character code. The code identifies the configuration, seal, and pressure setting mode (code from table I); high-pressure setting to within 100 lb_f/in^2 (code from table II) followed by high-pressure setting to within 25 lb_f/in^2 and applicable tolerance (code from table III); and low-pressure setting to within 100 lb_f/in^2 (code from table II) followed by low-pressure to within 25 lb_f/in^2 and applicable tolerance (code from table III). When a pressure differential is used for one of the actuation values, two codes from table IV are selected to define the differential spread.

EXAMPLE:

M9395/31- V DB FH

Prefix.

Configuration, seal, and pressure setting mode
Code "V" of table I.

High-pressure setting. Code "D" of table II (400 lb_f/in^2)
and Code "B" of table III (+25, ±25 lb_f/in^2).

Low-pressure setting differential. Code "F" of table IV
(125 lb_f/in^2) and Code "H" of table IV (+175 lb_f/in^2).

PIN M9395/31-VDBFH describes a switch of configuration "4" which actuates on increasing pressure at 400 ±25 lb_f/in^2 and with a deadband value of 125 to 175 lb_f/in^2.

TABLE I. Codes for combinations of configurations and pressure setting modes.

	Configuration 1		Configuration 2		Configuration 3		Pressure setting mode	
	Electrical chamber		Electrical chamber		Electrical chamber		High setting	Low setting
	Hermetic	Unsealed	Hermetic	Unsealed	Hermetic	Unsealed		
Code	A	D	G	K	N	R	At (or max) 1/	At (or min) 1/
Code	B	E	H	L	P	S	At (or max) 1/	Differential 2/
Code	C	F	J	M	Q	T	Differential 2/	At (or min) 1/

	Configuration 4		Configuration 5		Pressure setting mode	
	Electrical chamber		Electrical chamber		High setting	Low setting
	Hermetic	Unsealed	Hermetic	Unsealed		
Code	U	X	1	4	At (or max) 1/	At (or min) 1/
Code	V	Y	2	5	At (or max) 1/	Differential 2/
Code	W	Z	3	6	Differential 2/	At (or min) 1/

1/ Setting values are designated by characters from tables II and III.
2/ Setting values are designated by characters from table IV.

TABLE II. Codes for pressure setting to within 100 lb_f/in^2.

Code	Pressure (lb_f/in^2)	Code	Pressure (lb_f/in^2)	Code	Pressure (lb_f/in^2)	Code	Pressure (lb_f/in^2)
A	100	J	900	S	1700	1	2500
B	200	K	1000	T	1800	2	2600
C	300	L	1100	U	1900	3	2700
D	400	M	1200	V	2000	4	2800
E	500	N	1300	W	2100	5	2900
F	600	P	1400	X	2200	6	3000
G	700	Q	1500	Y	2300		
H	800	R	1600	Z	2400		

TABLE III. Codes for pressure settings to within 25 lb_f/in^2 and tolerances.

	Unit				Tolerance
	0	+25	+50	+75	(lb_f/in^2)
Code	A	B	C	D	±25
Code	E	F	G	H	±50
Code	J	K	L	M	±75
Code	N	P	Q	R	±100
Code	S	T	U	V	±150
Code	W	X	Y	Z	±200
Code	1	2	3	4	±300
Code	5	6	7	8	±400
Code	9	0	+	-	Min or Max

TABLE IV. Codes for differential pressure settings.

Code	Differential value (lb_f/in^2)	Code	Differential value (lb_f/in^2)
A	0	M	275
B	25	N	300
C	50	P	325
D	75	Q	350
E	100	R	375
F	125	S	400
G	150	T	425
H	175	U	450
J	200	V	475
K	225	W	500
L	250		

QUALIFICATION"

Single submission: Restricted to switch submitted.
Group submission: See table V.

TABLE V. Extent of qualification.

Part number	Number of samples required	Tests	Qualifies
M9395/31-AADAA M9395/31-DADAA M9395/31-G4ZXV M9395/31-N4ZXV	2 each resistive 2 each resistive 2 each inductive 2 each inductive	Complete in accordance with qualification inspection of MIL-DTL-9395	ALL configurations

NOTE:
Design limitations (actuation values and tolerances, deadband and deactuation values and tolerances) should be coordination with the manufacturer(s) listed on the QPL for this specification sheet before specifying a particular "M" number. The fact that operating characteristics can be coded does not necessarily mean that it can be manufactured or procured.

CONCLUDING MATERIAL

Custodians:
Army - CR
Navy - EC
Air Force - 11
DLA - CC

Review activities:
Army - AT, AV
Navy - AS, MC, SH
Air Force - 19, 99

Preparing activity:
DLA - CC

(Project 5930-1730-11)